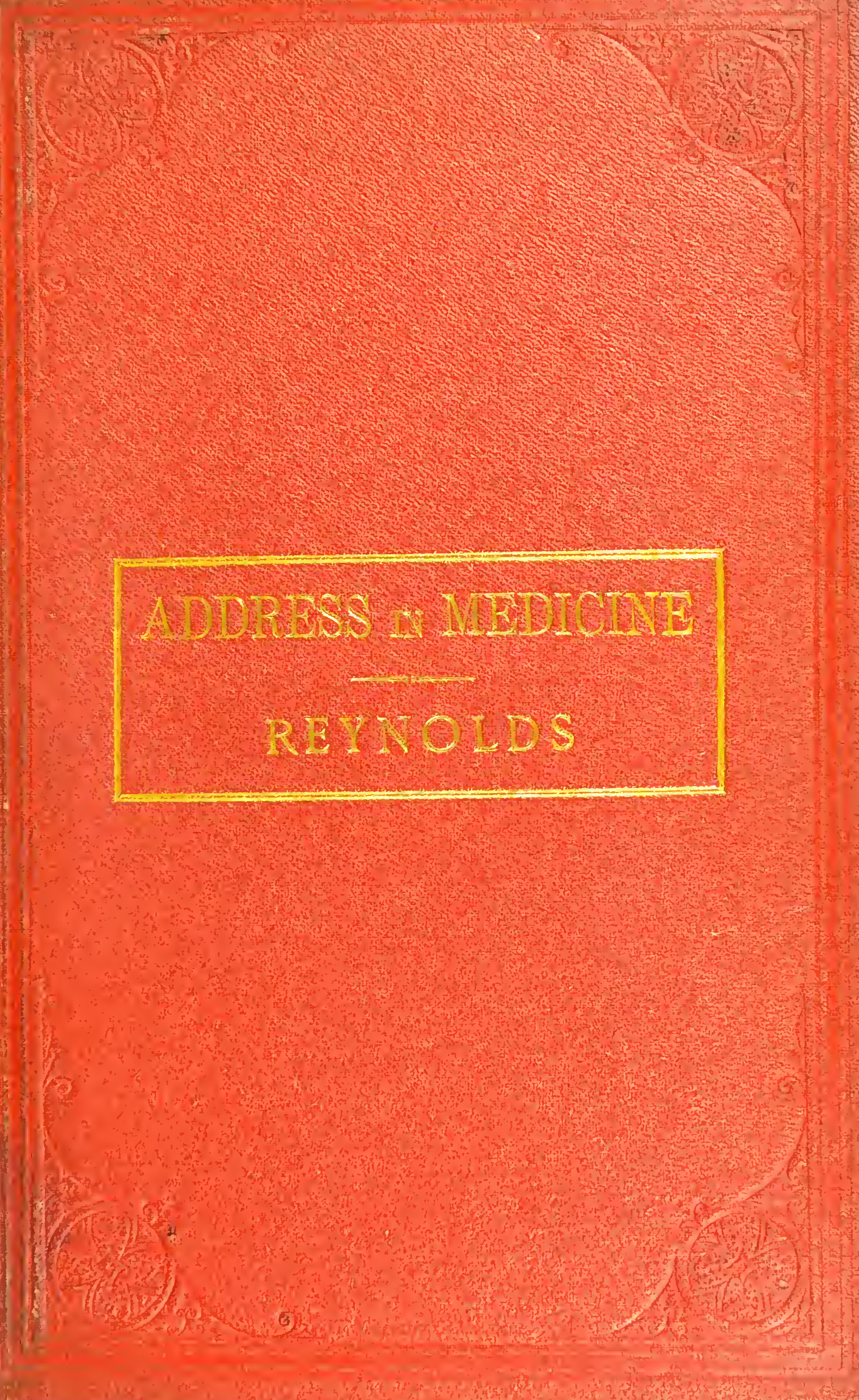

ADDRESS IN MEDICINE

REYNOLDS

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Dr Andrew Clark
with kind regards from the Author

ADDRESS IN MEDICINE

DELIVERED AT THE MEETING OF THE

BRITISH MEDICAL ASSOCIATION

IN NORWICH, 1874

BY

J. RUSSELL REYNOLDS, M.D., F.R.S.

PROFESSOR OF MEDICINE IN UNIVERSITY COLLEGE, LONDON
PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL

LONDON
J. & A. CHURCHILL, NEW BURLINGTON STREET
1874

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THIS address is published in a separate form, in compliance with the request of numerous friends.

In revising it, I have made some additions which seem to me to give strength to the argument it contains, but which, if introduced beforehand, would have rendered it too long for delivery at the meeting of the Association.

It is an address in "Medicine," and its object is to show the influence which modern scientific thought and method are exerting, through the minds of the Physicians and Surgeons of the present day, upon the daily practice of their profession.

J. RUSSELL REYNOLDS.

GROSVENOR STREET,
October, 1874.

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It is well that we should sometimes ask ourselves, with regard to the special sciences to which we devote our lives, the questions—Whence have we come? and Whither are we going?—and this has been obviously felt by those who, in directing the affairs of the British Medical Association, ordained that there should be an annual "Address in Medicine."

We can appreciate the nature of our present position only by a regard to the past and an outlook towards the future. If we would know what the present condition of medicine or pathology really is, we must see whence it has come, and whither it is tending; inasmuch as reference to the past is necessary for the comprehension of work that is in progress now; and a glance towards that which is to come, and which must be the outcome of our present work, is also essential, if we would test its truth or attempt to measure its value.

If Linnæus asked like questions about man, with an outlook into regions which have not as yet been drawn within the limits of exact science, we, too, in our review of pathology, must sometimes pass beyond the lines within which that science has, perhaps too often, been confined, and by which it has been sometimes cramped. Medicine is no isolated science; we cannot draw a line round the group of facts which we so denote—nor, indeed, around any group of facts—in such fashion that we may truly say that within its enclosure the whole of any one science lies, and that outside such enclosure all facts must receive a different name. The whole of any one science is the whole of all; and pathology has its biological, chemical, physical, and mathematical elements on the one hand, and its mental, moral, and social bearings on the other.

In the somewhat perilous task that I have set before myself it is not my intention to attempt to furnish an account of the details of recent scientific work in medicine; but rather, by an examination of our past and present relations to four great propositions, or—if I may use the term—articles of creed, to show how they have affected our modes of investigation in the past, how they are governing or guiding our labours now and what are the results which we see coming from the now existing and prevailing tendencies of thought.

The four articles of creed to which I refer as influencing, for good or for evil, the progress of scientific pathology, are a belief (1) in Life, (2) in Man, (3) in Individuality, and (4) in the Speciality of Disease. The relation of the worker to the notions entertained by him with regard to the facts connoted by each of those four expressions, must determine the character and bearing of his work, and it is my object to try to bring before you the nature and effects of that relation.

1. Those who have gone before us in the study and treatment of diseases have held, and that very strongly, to a belief, *first,* in Life, *i.e.,* in a power, force, or condition of matter which was *sui generis;* which could not be explained away; which could not be referred to any combination of physical powers; which had an origin, the nature of which was beyond the reach of our modes of investigation; the career of which was, although often " sore let and hindered," outside of, and above all temporary and material obstacles; and the end of which, as we see it here, was but the beginning of another development, for the features of which we must patiently wait until we ourselves had passed into another state of being.

It is obvious that this view of life often led investigators of disease away from objects which they should have examined, drove them into conditions of thought which were fatal to a correct appreciation of the truths they wished to know, cramped their notions of the possibility of preventing or curing sundry affections of both mind and body, and perverted the efforts which they did make for the alleviation of ills they could neither arrest nor remove.

Some of the names of familiar diseases point to the nature and key-note of the pathology of the times in which they were first applied, and illustrate the first point that I have mentioned. The terms " morbus sacer," " morbus comitialis," " morbus sancti Weitii," the " king's evil," " St. Anthony's fire," and the like, conveyed meanings that are now happily lost to science. The affections thus denoted were only a few of many which it was profane to attempt to account for by other than occult and mysterious influences upon the greater mystery of life. The investigator was driven back and away from thoughts or processes of examination which should intrude into these secret places of the unknown.

Again, the notion that life-processes were totally dissimilar from all physical and chemical changes, so that the life-force held all these changes under its own control, effecting, by its direct agency, movements both coarse and molecular, such as bore no relation whatever to the results of well-known chemical and physical forces, led the minds of the most earnest thinkers away from the proper track of scientific and legitimate research, and placed them in a condition of hopelessness and confusion such as nothing but a strong, and, perhaps, excessive revulsion could remove.

Diseases which were held to be the result of some direct interference with the higher processes of life, such as insanity of mind and many of the disturbances of motility and hallucinations of the senses, were maltreated or only tended, by incantations, or by the administration of some mineral, vegetable, or animal substances selected on no observation of their real therapeutic effects, but simply upon some mystic ground, some tradition, fable, or dream. And, again, the efforts that were made, within what was held to be the legitimate region of therapeutics, were misdirected and limited by the notions of volitional opposition to be overcome, not only in the patient, but in this organ and in that, and the processes directed to overcome this resistance were often absurd, and sometimes worse.

A change has passed over all this mode of thinking; processes and phenomena which were held to be among the sacred mysteries of life have been shown to be facts of chemistry and physics—facts which can be recorded by figures, words, and drawings. The chemistry of digestion, of assimilation, of secretion and excretion, has been pursued, and unravelled with scrupulous care and marvellous exactness. We have learned something of the rate of movement of nerve change; of the nature and mode of the operation of impressions on the organs of special sense; of the conditions of muscular contraction; of the relation between definite movements of the limbs and certain portions of the brain, and, indeed, of many curious links between some of the higher processes of thought and special portions of the nervous centres. Diseases have been produced by artificial means; one disease has been used to destroy another, and vaccination has done much to diminish, and may probably succeed in eradicating, small-pox; diseases have been removed by chemical processes, both directly and indirectly; the diabetic process has been controlled by a diet-rule; sarcinæ have been killed by sulphurous acid; and electrical appliances have restored wasted muscles and inactive nerves when these were apparently beyond all reach of hope. Modern pathology, by the aid of the microscope and the test tube, and by other means, has read many of the secrets of life, and the physician has been able so to wield the forces of life as to set right much that was wrong, and bring back the functions of organs which were virtually dead.

But, granting that we have removed much of the traditional mystery which obscured the facts of life, that we have resolved many so-called living actions into chemical and physical processes, and have described them in other than "vital" terms, it may still be questioned whether or no we have advanced many steps in the solution of the ultimate and real mystery of life. The tendency of the present day is to believe, and act upon the belief, that we have done so; and, as it seems to me, to push aside awkward facts as irrelevant or unreal, and to smother questionings by representing them as either solved, insoluble, or worthless. It seems to be almost believed by some that, if the chemical elements of which organized and living beings consist are brought together under favourable conditions, they arrange themselves into vital forms and execute vital functions; and just as certain bodies in solution may assume definite crystalline form, so other bodies may agglomerate into organic form and exhibit the properties of life.

Again, the obvious "correlation" of the physical and vital forces has led some to believe not only in the correlation of forces and actions, physical and vital, but, further, in the identical nature of the two; and so that which constitutes the true differentia of life appears to me to have been lost sight of in the very brightness of the light which has been thrown upon the conditions of its action. It is well known that heat, electricity, light, air, food, and other external physical forces, impressions, and materials are the agents by which the processes of life or vital actions may be educed, and without which they fail to show themselves; but, when the idea is entertained that life itself is nothing more than an aggregation of the resultant movements of these conditions, materials, and forces, it seems to me that we are wrong. Impressions from without may determine the occurrence of motion or sensation, but the secret of life is still hidden in the organism which transmutes the one into the other.

Physical force may be correlated to vital acts, but life itself is the special property or condition of the special material which effects that peculiar relation, and it is as far from comprehension now as it was a thousand years ago. Heat applied to a fertilized and "living" egg may set in motion all those chemical and physical changes and movements which make up the living processes of a growing bird; but, if the egg be not living, to begin with, heat but hastens another series of chemical changes—those of disintegration, putrefaction, and decay. Life is still hidden in the wonderful cells from which all these changes of structure and function take their start. Again, if we apply electricity to a nerve-trunk, a cerebral convolution, or a more central structure of the brain, motions of definite character, association, and sequence may result; but the secret of life still lies hidden in the properties of those nervous elements which transmute such electrical impression into the fact of muscular contraction, and association of muscular contractions, in the movements of the limbs.

To illustrate my meaning here, let me remind you that every so-called chemically "elementary body" is known as such only by the power which it possesses of so modifying materials and forces with which it is brought into contact, as to be distinct in its sum of properties from every other elementary body. We can describe it only by terms which involve some facts simpler than those of chemistry; but the idea is irresistible that, *e.g.*, gold, silver, and lead differ from one another in the fact that each of them has in itself a "something"—we know not what—which determines the various bearings of each of those elementary bodies under the varying conditions to which they may be exposed—a something which makes them what they are, and to which we unconsciously refer in thought when we give them names and places in scientific categories. It is this individuality, or "tendency to individuation" as it has been called, which constitutes that which has been, but as I think incorrectly, termed the "life" of those bodies; for if we apply the word life to them, we need another term to denote the special properties of the so-called "living things." The process of thought which is true with regard to the chemically elementary body, may be applied with greatly augmented force to the living organic body—no matter how simple or how complex;—that which makes it living, which alone justifies the attribution to it of the properties of life, is the possession of an individual power of behaving in such a way—under given circumstances, and amidst the brunt of conflicting forces, and surrounded by varying materials,—that it evolves the phenomena we designate as vital.

I do not mean to say that anyone distinctly says to others, or even to himself, "I can make living beings by putting together the elementary bodies of which they are composed, under favourable conditions;" nor do I think that there are many who would say, "Life differs in no respect, in all its details, all its relations to personal consciousness, to moral sense, to intellectual product and to social history, from the physical forces whose modes of action we know so accurately as to be able to foretell the results of experiments we may make, or of processes which we see advancing." But I do say this, that many seem disposed to think that, if we could make our experiments only a little more clever, that if we could carry our machinery of experimentation but a little further—and there is no doubt that we shall do so very shortly—we shall get rid of the term and the idea of life itself, and so make a great advance in science. It may be that this will be done; but, for one, I believe that it will not be done. There is, for my mind, no approach to a solution of the problems of either the nature or origin of life to be found in pointing out a certain resemblance between the protogenes of Hæckel and "drops of oil suspended in a mixture of alcohol and water." The resemblance is superficial, the difference between them is essential. Nor need we go so far backwards to see the fallacy of reasoning of such kind. Those simple cells, the germinal vesicles of two eggs—say of a pigeon and a parrot—are much more alike than are the very lowest forms of life and globules of oil covered with a coating of albumen, or suspended in alcohol and water. Neither microscopist nor chemist can distinguish between them; and yet, by the application to each of them of the same simple force, heat, the one develops into a bird, which, if it escape the gun, has yet but a short term of life, and a very limited intelligence, while the other has a much greater diversity of gifts, and a span of life beyond that of two or three generations of men. If these two cells are really alike, *i.e.*, if there is no difference between them, then their subsequent development is but a series of creative acts, a "making of something out of nothing." If they are not alike, but are so far unlike as of themselves to determine all the divergence of structure, function, and durability which exists between the pigeon and the parrot, we must admit the presence of a force to which we know nothing akin, and the existence of the most marvellous differences of property in two objects which we can see through and through, and yet be unable to distinguish from one another. The long word "differentiation" affords us not the slightest help in this matter, for all that it can mean is, that a difference pre-existing, but the nature of which is absolutely unknown, becomes recognizable by our senses.

There must be, hidden in those apparently homogeneous structures, differences of either matter, or of force, or of both, as great in itself as all that which is subsequently displayed in the plumage, the habits, and duration of the two birds I have mentioned. To use the term "differentiation," as if it conveyed any explanation of the facts, appears to me to be taking refuge in a metaphysical subtlety in order to hide the imperfections of scientific observation. It may be that, hereafter, we may discover some method of appreciating the differences between these and a thousand other apparently homogeneous organisms, but we have not done so yet. They present themselves to us like so many colourless solutions, it may be, of a thousand different salts. They all look alike; we can see no differences between any two of them, and yet they contain within themselves all the differences that exist between the so-called "elementary bodies." Apply certain tests to them, and their differences become apparent; this clear, colourless solution throws down a precipitate, that becomes yellow, and a third turns black. But the essential difference between this elementary body and that is no greater now that it has become revealed to our eyes than it was when it lay concealed in the transparent and colourless solution. The only method by which we can, at present, distinguish between the earlier and simpler forms in which living organisms present themselves, is by waiting and watching them as they grow, *i.e.*, as they pass through a series of processes, the like of which exists in no other form of matter, and to which, by the very conditions of our mental and moral nature, we are bound to give a name, which shall distinguish such changes of structure and function from all other processes, and such name is "life."

In what I have said, the terms matter, material, structure, and organism are employed, as well as the words function, property, and force. It seems to me that it is impossible to move without some one or more of each of these two classes of expression. So far as the external world is concerned, we can know nothing of matter, and say nothing about it except in the terms of force; and, on the other hand, we know nothing of force external to ourselves except in association with matter, and can describe it in no other way than by words which relate to material change. But does not this very idea of force—upon which we are so dependent for our knowledge and description of matter—arise from within ourselves? Is it not the result of our consciousness of external impressions, and of their effect upon us; our consciousness of like, dislike, choice, purpose, power, and action? If it be so, we can know nothing about matter except and inasmuch as it affects ourselves, and so find the key to an acquaintance with its manifold varieties of action in a knowledge of the phenomena of life. If we would seek for its analogues in the globules of oil, we must also study its conditions in the mind and heart of man. However keenly and satisfactorily many of the processes of life may be referred to simpler agencies, there will, perhaps, ever remain the same kind of mystery with regard to life itself that still shrouds the nature of those simpler forces, such, for instance, as gravitation or heat, with regard to the nature of which many have ceased to question. "As to what weight and attraction are," says the leading thinker of much modern science, "we have nothing to do with that, for it is not a matter of knowledge at all. Theologians and metaphysicians may imagine and refine about such questions; but positive philosophy rejects them." It has been admitted that their "essence" is beyond our ken, and that we can but study their phenomena; we have not tried, or have failed if we have tried, to reduce them to a common denominator. But with regard to life, we have drifted into a sort of belief that it is to be decomposed, explained away, or got rid of; and that our true line of action is to be found and followed by such a belief in the future results, rather than in the present or the past facts of science. But I claim for life that it be treated with a respect like to that which we have accorded to gravitation; and I do so because, notwithstanding all the researches of modern science, and all the clever analogies of recent thinkers, it still stands alone, undecomposed by chemist or histologist, and presents a series of phenomena which no known physical or chemical process has explained.

The mode in which the state of mind that I have described affects us, as physicians and surgeons, is, I think, injurious. Among other evils which come from it, I will mention two. The first is, the growing disregard of what may be termed "subjective symptoms" of disease; and the second is the effect which such frame of thought exerts upon therapeutics.

With regard to the former—"subjective symptoms"—is it not coming to this, that but little attention is paid to the accounts which patients give us of themselves, their ideas, emotions, feelings, and physical sensations? These are things which we cannot weigh in our most guarded balances; measure by our finest scales; split up in our crucibles; or describe in any terms save those which are peculiar to themselves, and which we cannot decompose. These symptoms are often disregarded and set aside; and the patient, whose story of disease is made up of them, is thought fanciful, hypochondriacal, hysterical, nervous, or unreal; because, forsooth, we have physically examined thorax, abdomen, limbs, and excretions, and have found in them nothing wrong; because we have looked at the retinæ, examined the limbs electrically, traced on paper the beatings of the pulse, weighed the patient, and have not found him wanting; still he is miserable, in spite of placebo and assurance that there is "nothing organically wrong." There may be in him the consciousness of a deep unrest; or of a failing power, which he feels, but which we cannot see; or of a something worse than pain, a sense of "impending evil," that he is conscious of, in brain or heart; a want of the feeling of intellectual grasp, which he may call "failure of memory," but which memory, when we test it, seems free from fault; a want of the sense of "capacity for physical exertion," which seems, when we see him walk or run, to be a mere delusive notion, for he can do either well and easily to our eyes and those of others; and so he is called "nervous," and is told to do this or that, and disregard these warnings that come to him from the very centre of his life.

And let me ask whether or no it has not again and again happened in the course of such a history as that which I have only faintly sketched, that some terrible catastrophe has occurred? Do we not see minds gradually breaking down while we say there is no evidence of organic change in the brain? hearts suddenly ceasing to do their work, when, after careful auscultation, we have said that there was nought to fear? Suicide or sudden death sometimes disturbs the calm surface of our scientific prognosis of no evil; we may be startled, and may then see all that we ought to have seen before. But when the ripples that such unforeseen events have occasioned on that smooth surface have subsided, we go on as we have already done, and still pay but little attention to what the patient feels, and delight ourselves in the precision of our knowledge with regard to physical conditions of which he may know nothing and may care still less.

No one can appreciate more highly than I do the value of precise observation, but I do not believe that minute, delicate, and precise observation is limited to a class of facts which can be counted, measured, or weighed. No one can see more distinctly than I do the wrong conclusions at which a physician may arrive by accepting as true the interpretations which fanciful patients may offer of their symptoms; but I am sure that, if we pay no heed to these mistaken notions of a suffering man, we may lose our clue to the comprehension of the real nature of his malady. Morbid sensations and wrong notions are integral parts of the disease we have to study as a whole, and we are bound to interpret their value for ourselves; but we can ill afford to set them aside, when we are as yet but in the dawn of scientific pathology, and are endeavouring to clear away the obstacles that hide the truths we hope hereafter to see more clearly about the mystery of disordered life. The value of such symptoms may be slight in some kinds of disease, when compared with that of those phenomena which may be directly observed; but we are bound to remember that there are many affections of which they furnish the earliest indication, and there are not a few of which they are throughout the only signs.

Again, the view that is taken of the correlation of vital and physical forces, when it assumes the form that I have mentioned, and which amounts to a practical ignoring of the fact of life, is, I think, mischievous in therapeutics. That which is the differentia of life is, as it seems to me, lying in the organism, and is that which makes it capable of transforming physical forces into vital acts. But what we are often attempting to do in our treatment of disease is to elicit vital *action*, rather than to conserve vital *force*. We see that, by giving such and such drugs, we change—and, as it seems, for the better—the mere processes of life; we may limit or increase muscular movements; we may augment the quantity of secretion here, or of excretion there. But, let me ask, do we not often see that, when we have effected these changes, when we have given diuretics, purgatives, diaphoretics, and the like, and have witnessed their appropriate physical results, the disease is no better than before, and the patient is worse? We have brought vital processes into play, but have used up the vital force in doing so.

On the other hand, we try to check what appear to be excessive and exhausting discharges, or tiring and distressing acts; we try and often succeed in diminishing the frequency, force, or extent of certain vital functions that appear to be, and indeed are, beyond the normal range. But, again let me ask, do we not often see, when we have succeeded in lulling a cough and diminishing the amount of expectoration, that other and far graver troubles supervene; that, when a diarrhœa or diuresis has been cured, the patient is worse than before; that when a skin eruption has been removed, some nervous trouble takes its place? Again, by the administration of alcohol, or of other stimulant or tonic, we may often help a man to get through some work for which, without such aid, he was totally or partially incompetent; we have evoked an amount of vital action that would otherwise have been impossible. But do we not often see that we have really done more harm than good; that the weakness has increased, and that the necessity for stimulation has become aggravated, and that what was really needed was food and rest, which should have nourished the organism, built up the tissues, and replaced what was wanting in living force? We have helped our patient to do things he could not otherwise have done, but we have used up his life in doing so.

Once more: in the present day, electricity, in its many forms, has come again into fashion, and constant and faradic currents, chain-batteries, and magnetic belts are found as topics of common conversation or articles of dress, in boudoirs and clubs, as well as in the consulting-room of the physician. The mischief that is being done by such abuse of a very valuable therapeutic agent is grave and manifold; but is the profession altogether blameless in this matter? There are some conditions in which electricity is very useful, and useful by calling into play the function of nerve and muscle; but it has again and again been used when it could by no possibility have been productive of the slightest advantage, and when the production of such enforced action of muscle and nerve has but diminished the strength and exhausted both the energies and the endurance of those who had not one grain of either of those qualities to spare. Muscles and nerves have been driven into action when they needed rest; but that which has guided the practitioner into such mistaken practice has been the notion that to evolve function was the great end of treatment, whereas what was really needed was a conservation of the central nutrition, and a consequent addition to the stock of vital force. Rest, food, cod-liver oil, and soothing drugs were needed; and not faradization, alcohol, or strychnia.

These points are enough to show the class of evils which may arise from what I hold to be a wrong way of regarding the relation between physical and vital force, between life and vital function; and I cannot but think that, by a review of our ideas of life, and by a regard to the objects, direction, and limits of our therapeutic agents, we may hereafter find it less frequently recorded in the domestic annals of our patients, that he or she had "suffered many things of many physicians, and was nothing bettered, but rather grew worse."

As ancillary to the line of argument which I have followed, there is much to be gathered from a regard to the recognized causation or etiology of disease. The external conditions which derange or disturb health may be grouped in the following manner:—1. Those which change the due income to the body of ponderable, measurable, intelligible, and appropriate materials, such as food in all its forms, solid, liquid, and gaseous. These may be deficient, excessive, or unwholesome; and we know fairly well the results of bad eating and drinking, of bad water and bad air. 2. Those which interfere with the due elimination from the body of its waste products—faulty secretion and hindered excretion. 3. Those which diminish, derange, or exaggerate the amount or influence of certain imponderable agencies—light, heat, electricity, and the like; and here too, I would place physical injuries. 4. Those which in any way disturb the due exercise of the body in such way as to distort the balance between income and expenditure of these imponderables—for example, overwork, underwork, deficient motion, deficient rest, care, anxiety, and toil.

I do not know what recognizable and ascertained external cause of disease might not be included within one or the other of these four categories; and by their aid we may explain a vast number of the morbid conditions which we have to study and to treat. But let me ask if, after the most careful scrutiny, we are not again and again compelled to say we can find no cause for the particular malady presented to us in this person and in that. We fall back upon constitution, predisposition, hereditary taint, and other easily employed, but most inadequately examined and utterly uncomprehended, words, to account for what we do not know, and can by no means explain; and by the use of such phrases we only shunt the etiology into a siding, or throw back for one or two generations that which is inexplicable in the present.

We know much of the conditions determining the occurrence and favouring the development of the "acute specific diseases." We know much of the results of accidental exposures, of overwork, of faulty education, and of miserably defective hygiene. We know something of the conditions which may aid the growth of the group of "constitutional diseases," and which may antedate the processes of natural decay; we know much that may be useful in its application to masses of people, and to this I shall refer hereafter. But what, let me ask, do we know, and know definitely of the common starting-point of disease, of so-called "constitutional" sort, in a large proportion of the cases that come under our care? It is worse than idle to assume that we know as yet truly the general etiology of cancer, of Bright's disease, of tubercle, of Addison's disease; or, again, of that which determines the occurrence of many maladies of the nervous centres which crop out in writer's cramp, torticollis, chronic chorea, locomotor ataxy, epilepsy, diffused sclerosis, or general paralysis. We often find nothing that we can honestly regard as a cause of such malady, or we lightly refer any one of them to conditions common to the causation or supposed etiology of all, and then fall back upon peculiar predisposition; for upon the most careful scrutiny of all antecedents, we are unable to explain why this man has Addison's disease, and that suffers from ataxy, why one suffers from cancer, and another from writer's cramp. There is much that is as yet withheld from our most earnest gaze—much that, as it seems to me, we must as yet refer to a change, the nature of which we do not know, in the very innermost recesses of what we call "life." There is something radically and essentially wrong in that upon which all these so-called "causes of disease" are brought to bear; and I think we are driven by the facts of daily experience to believe that the organism—the living material which, by virtue of its own endowments, determines, in obedience to external impressions, all vital acts—is in itself at fault; and that its departures from the normal condition vary, and are different the one from the other, in such way as to produce those various modifications of structure and function which we term "constitutional diseases." As physicians and surgeons, it is our part to conserve life by preventing, when we can, the inroad of disturbing agencies; to preserve life in its integrity of useful work and fit association with all that makes life happy; to help it in its weakness, heal its suffering, lessen its sorrows, and soothe its closing hours; but I think we shall accomplish these purposes successfully only by admitting its existence, its separateness from all other forces, acknowledging its mystery, bowing ourselves down before the enigma of its origin, and reverently humbling ourselves in face of its unsearchable but wonder-teeming end.

2. In continuing our review of the past and observation of the present, let me next remind you that the fathers and forefathers of pathology held a firm belief in the essential peculiarity of MAN. They believed that man was a creature in many respects allied to and resembling other members of the animal kingdom, which was, or had been, brought into more or less complete subjection to itself, but presenting points of difference from the so-called lower forms of life far greater in their intrinsic value, although, perhaps, far less in their numerical representation, than the points of agreement or resemblance. Thus, and for this reason, the maladies of man had an appearance and received a consideration which could be understood and justified only upon regard to a belief in the entire separateness of man's life and history—in its origin, its purpose, and its end—from that of the most elevated and most familiar members of the animal kingdom.

The effect of such teaching was to set a limit to the acquirement of certain classes of knowledge which might be highly useful to man in regard of many of his bodily ailments. And not only so, it led to an entire misapprehension of many facts that were of constant occurrence in the healthy and unhealthy lives of men. Actions which are commonly known and observed in man—actions of simply reflex character, of sensori-motor, or of emotional origin, in addition to all those which were regarded as intelligential,—were separated by a broad line of distinction from all similar actions occurring in the most gifted animals. This being so, the attempts which were made to explain such phenomena in man had their starting-point, not in physiological method, but in metaphysical speculation. Animal life, in its various outgoings, was abased that man might be exalted. The term "instinct," was rarely applied to the latter; the possession of "reason" was denied the former. And in the present day we constantly hear, on the one hand, of the remarkable "instinct" of the dog, for example, as an explanation of some distinctly intelligential process; and, on the other hand, we hear many facts and functions of human life described in terms of intelligence, while they are, in reality, examples of but instinctive impulse, sensori-motion, or reflex action.

It would seem, from what we often hear, as if the idea prevailed that instinct grew up into wider and more complex function from the lower forms of life until it had reached its maximum in the highest and most gifted animals, and that from this point man started on an entirely new basis, and that all the actions performed by him, from the cradle that rocks his first infancy, to the coffin which at last cradles his second childhood, were the outcome of another and separate power. Herein we see the existence of a twofold error; for, firstly, the purely instinctive acts of animals are witnessed in their highest perfection, and in their most remarkable mechanical results, in such lower forms of life as seem to be altogether deprived of intelligence; whereas the introduction of intelligence in the higher animals stunts and overrides their purely instinctive acts. The bee builds its cell and the spider spins its web with an accuracy which the skilled hands of man might envy; but the dog, the cultured friend of man, learns to forsake the instinctive habits of his race, and to do things which no instinct could ever enable him to do, and to take joy in acts of obedience and affection, which might furnish, and have furnished, useful examples to ourselves.

Man, secondly, on the other hand, from earliest infancy to oldest age, exhibits much that is purely instinctive, and which deserves no higher or no other name. And this is seen not only in the baby feeling for, and kneading with its tiny fists, the breast that feeds it, nor in the second childhood that puts out its lips and grasps the hand that brings its food, but in all the " seven stages " of life that our great poet has described. In the schoolboy, the lover, the warrior, the justice, and the decaying senior, we see the several time-ordered instincts cropping out; and determining now, as they have done in the ages that are gone, that about and around which poetry may wrap its finest tracery of verse; upon which philosophy may build its brightest hopes, and from which, in another mood, it may shrink abashed and humbled; and by which religion is sometimes lifted into its highest phase and sometimes driven backwards, almost to despair. Each period or stage of man's life has its special instinctive characters, and few of my audience will think that, in saying so much, I have overstated the quantitative value which is at this time given to the merely physical powers and determining forces of the complex life of man. The tendency, as I read it, at the present day is to pass to the opposite extreme, and to see nothing distinctive in human life; nothing which cannot be explained in physical function, by reference to the lower forms of animal existence; and nothing in the mental and moral history of ourselves which cannot be referred to analogous processes of material change.

It does not seem to me that the well-known experiments upon decapitated, or otherwise injured, batrachians, in whom certain apparently purposive movements are observed, when external impressions are made upon them, furnishes the clue to a comprehension of the more complicated and volitional movements of man. The frog swims and leaps as soon as it has the bones and muscles which are the necessary mechanical apparatus for the performance of these acts, and the division of its anterior from its posterior brain-segments does not affect its capacity for such performance; but man has to *learn* to walk and to learn to swim. It is by a process of more or less laborious education that man acquires the arts of talking, writing, shooting, and the like, and not only so, but of even standing in the upright posture. He has, as it were, to create, or organize a series of formulæ or working-plans for his nerve-forces to act upon; and when he has done so, movements, and combinations of movements—at first difficult and volitional—become easy, and can be continued without any effort of the will. We stand and walk without conscious effort, and probably without any other than simply reflex operations of the nervous system, which has been trained to perform these so-called "secondary automatic" movements. But if we would walk across Niagara on a rope we should require much more special education, and probably some individual peculiarity of constitution. The complicated movements of some quasi epileptics when unconscious are only repetitions of those which have been acquired by practice. I have never seen purposed movements in the limbs of a man who was paraplegic.

The mere repetition of impressions from without does not necessarily induce increased sensitiveness to their presence, or increased agility of movement. On the contrary, except upon one condition, the sensibility to impression is diminished, and the readiness of action is reduced, with each recurrence of the impression, until at last it is neither felt nor acted on. The one condition which is necessary to make all but the naturally innate sequences of motion upon sensation, or impression from without, possible, or more easy of occurrence, is "attention;" *i.e.*, the direction, the volitional direction of the nervous forces to the reception of the impression, and the performance of the act. The simply "instinctive" acts require no thought nor care; they are perfect at their first performance; their formulæ are a part of the original nervous endowment of the creature that displays them. They resemble the clinging of the tendrils of the passion-flower, or the firm hold of the tiny suckers of the amblyopsis, rather than the voluntary, or even secondarily, automatic acts of man or of the higher animals, which, so far as I can see, they do nothing to explain. Let us clearly separate between them; attach no higher value to those instinctive or automatic acts of man than is their due ; but let us not, in our haste to generalize, lose sight of the main factor in all real education of both mind and limbs, viz., the directive influence of the will, which, whensoever it may come, and howsoever it may work, is yet that which renders possible all the higher acts of man, and which should render it impossible for him so to forget his place in nature, that he needs to learn again the lesson that might be taught him by "the ox that knoweth his owner, and the ass his master's crib."

For myself, I must protest against the view that I have described, and I venture to do so, not as a philosopher or moralist, but simply as a physician in daily contact with those who are suffering from mental and bodily disease.

I see in the latter—the bodily ailments of men and women—as the most frequent causes of their occurrence, and as the most potent elements of their etiology, disturbances in the working of those social, moral, and intellectual processes, which are unlike and apart from anything which can be even tortured into resemblance to the causes of disease in animals. The cares of professional life, the worry of the Stock Exchange, the heated excitement of the betting-room, the luxurious idleness of the club, the intellectually guided epicureanism of sensual excess, the feeling of the urgent pressure of family and social needs, as well as the fierce conflict between moral sense and religious training on the one hand, and doubtful practices and honest and dishonest scepticism on the other, are the most fruitful sources of loss of rest, recourse to stimulants and narcotic drugs, failure of appetite, disturbed digestion, mal-assimilation, "nervous break-down," and all the thousand ills that flesh is heir to. I say, designedly, "that flesh is heir to," because I am now speaking of bodily ailment only, and affirm that this kind of causation of malady is peculiar to man, and that we lose sight of much which it behoves us to consider if we fail to see the broad line of distinction, which, in this particular, separates him from the animal kingdom, to which he is allied.

Again, the inferences that have been drawn from observations on animals, with regard to the phenomena of diseases apparently common to those animals and to man, have, I think, been pushed too far, and have led to much unintelligible controversy. The differences between the human and the animal organization have been sometimes lost sight of, although many of them are obvious enough. Variola and vaccinia afford a striking illustration of my meaning, when we remember their different relations to infection and inoculation, and the curious effects which are produced by the passage of either of these poisons through the human body, or through that of the cow. This is but one of many examples that might be given of the necessity for the inoculation of poison from the animal world, if we would infect the human being with its virus; and there are others which show that the ordinary mode of transmission from animal to animal is restricted to special groups of animals, and does not apply to man.

Still further, the very interesting observations that have been made with regard to the inoculation of tubercle exhibit another striking difference between man and those rodentia upon which the experiments have been made in the greatest number. I allude to the freedom of the brain-membranes from the effects of the general infection. We may speculate upon the causes of such a difference; and it matters little for my purpose whether or no the greater development and activity of the human brain should determine its proclivity to suffer from tuberculization of its meninges. That such difference does exist is a well-known fact, and points to a still greater and wider difference which we should not ignore. Again, the action of many familiar drugs upon the most familiar animals is so different from that which we know to occur in man, that therapeutic experiments upon the former should be received with much more than " one grain of salt " when they are put forward as our guides in the treatment of human malady. If mercury fail to increase the biliary secretion of dogs, and if opium cause diarrhœa in those, our delightful companions, we are not justified in the inference that "blue pill" is useless in some forms of so-called "bilious headache" in the man, and that opium is valueless in some forms of human diarrhœa.

To pass, however, from these physical ailments, to those which show themselves in disturbance of the higher faculties of man, let me remind you of another great distinction of man from the members of the animal kingdom in his exhibition of a form of malady, or rather many forms of malady, from which they are happily exempt. Something very like epilepsy occurs in dogs, in horses, and in domesticated birds, and it may be artificially produced in the rodentia. Something very like the stupidity and waywardness of man may be seen in our domesticated friends—they exhibit sometimes, as it has been said, " a disobedience almost human;" but the curious and complicated phenomena of insanity have never, so far as I know, been observed in the lower animals. We may see in them the delirium of fever, the hallucinations of commencing rabies, the irritability of advancing years or of premature decay,—the outcome of forced luxuriousness, that antedates the fretfulness of age; we may find them stupid and long-lived, or precocious, clever, affectionate, impulsive, and so possessed of faculties that would make us apply to them, and in an enlarged sense, the old adage, that "those whom the gods (and not only the gods, but men) love, die young;" we see them weakened in body and in mind,—but we do not see in them "insanity," *i.e.*, in any of the more striking forms in which it presents itself to the physician, whose business it is to deal with human beings.

This distinction, which adds to the many other helps that we may derive from the animal kingdom, seems to me to be of great value when we are attempting to show the difference between man and those creatures to which he may bear the closest physical and intellectual relationship. It is so, not only in regard to the lower corporal distinctions that may be traced, but in respect of that which affects man in his highest relations, his mental and moral capacities for exertion, and also, unhappily, for his disease.

We cannot pay too high a regard to all the conditions which conduce to physical health; but I am sure that we shall lose much, of quite inestimable value, if we regard these only, and look to an infant, a growing child, a youth, or an adult, as a mere animal to be trained, for this work or for that, just as we might train, or "break" in, a dog or horse, and neglect those other elements in his higher training or education, which have no direct relation to those lower phases of life, but which are an integral part of his development, and essential to his fitness for the position for which, by the nature of his constitution as man, he is created.

All that I have already said upon the neglect and value of "subjective symptoms" of disease might be recapitulated here, and urged with augmented force; for it is obvious that we must depend entirely, in many cases, for our knowledge of the phenomena of disease upon that which reaches us through the mind and the words of our patients. Gestures, screamings, inarticulate sounds, interjections—

articulate or not—and, perhaps, some "expressions of the face," may be ranked with "objective symptoms" of disease or suffering. It is not to these that I refer, but to those symptoms which require the consciousness of man for their existence, the intellect and speech of man for their conveyance to another. There are forms of disease the earliest, and sometimes the sole indications of which are of this sort. If they depend upon material changes in the cerebral centres, or in other portions of the nervous system—as in all probability they do—they are yet revealed only in the effects of such change on the consciousness of man, and in his power to convey the idea of his personal suffering to the mind of his fellow creature. We do not understand the many and marvellous modes of communication between different members of the same species of animals; but we can observe them, and see that they are unlike our own. If we would understand our patient—a human being—we must listen to what he can tell us of himself; and I cannot but believe that, if we would so regard the ills and sufferings of man as to endeavour to assuage them, we must deliver ourselves from notions, however plausible, and from theories, no matter how clever, which reduce man to the level of "the beasts that perish." While we refuse to be led astray by old-fashioned dogmata that would ignore his relation to the animal world, and his possession of qualities which in no sense differ from those which we see in the donkey, dog, or horse, we should not fail to recognize in him faculties which they do not possess, and which may be the fruitful source of disease; powers in him to which they show only the faintest resemblance, but which, in him, may constitute by their derangement the misery of life; and modes of treatment which can only be successful by the fact of their basis being the belief in the fact of manhood.

At every period of life, of human life, we may often see much that is purely instinctive relegated to a higher sphere of motion, and may, in cynical mood, sometimes say about the youth—

> " 'Twas strange that one so young should thus concern
> His brain about the action of the sky:
> If *you* think 'twas philosophy that this did,
> *I* can't help thinking puberty assisted."

But I am sure that we shall do our work the better, if we come out of and above this lower ground, and recognize in the suffering man the fact of qualities which transcend all that we know of the mere animal life; see in him a sense of duty and of self-sacrifice, an outlook to the future and to the unseen, a weariness of the merely temporal, and a belief in the eternal, that shall lift him into the region of our personal sympathies, and out of those simply physical ranges of action which we recognize in cats and dogs. There may be much to disturb his appreciation of the two worlds to which he feels himself to belong, much to make him sometimes cling tenaciously and blindly to the "seen," or much to urge him onwards in an equally blind pressing towards, or absorption in, the "unseen," or much that makes him incapable of appreciating the reality of either; but still, as we look at man, in his misery, shadowed over with doubts, and hindered by fears, quailing before imaginary ills, or exulting in factitious joys, we can pity him, feel for him, try to help him, wonder at him, fail to understand him, but we cannot despise him, we cannot thrust him down to the level of the brute, but rather ask ourselves, in deep sorrow, or in deeper joy—

> "Though world on world in myriad myriads roll
> Round us, each with different powers
> And other forms of life than ours,
> What know we greater than the soul?"

3. The next point to which I wish to direct attention is the belief in "Individuality;" the influence which this belief has

exerted in the past, and still exerts in the present history of pathology; and also the effect which a disbelief in the individuality of each human being seems likely to effect on the future of our science and art.

Our forefathers, and indeed many of our collateral relations in the brotherhood of our profession, did, and do still, cling to the persuasion that, although there may be much similarity between all the members of what we call the "human family," or "human race," there is to be found between each member of that race, and every other, a difference, which, not only for the sake of the individual, but for the purpose of complete scientific investigation, overrides the generic resemblance, so that every man, woman, and child presents for investigation and treatment a personal and a family history which we should be unwise to ignore. To have known the individual from his birth, or to have "brought him into the world," as the somewhat arrogant but time-honoured phraseology runs; to have known his parents and his family, and to have watched his childhood, youth, and manhood, were conditions which were held, and are still held, to be important elements in the probability of correctness in a physician's diagnosis, prognosis, and treatment of the case that comes before him. And surely there is something to be said upon the value of such knowledge. But I think that it has been heretofore often overrated, and that now it is in danger of being underrated. So long as, and wherever, such knowledge was the excuse for ignorance of general pathological laws, or the cover for carelessness in the examination of the patient, it was evidently wrong, and abundantly productive of false notions and mischievous treatment. It was an injustice to the individual, and an injury to the practitioner.

But let me ask if we are wise in ignoring all information of this sort? Whether we may not learn much from the family history and the idiosyncrasies of many, which would be utterly passed by except for such accidents of professional information? Whether or no we would not sometimes trust ourselves, in our own sufferings, to some one who knew us well, and had known us long; who knew our parents and our belongings, and who, with no special skill in the use of many implements whose names may end with "scope," hit out some common-sense line of treatment, the result of much experience and far-seeing, rather than commit ourselves to the care of the most highly trained graduate in medicine, who could see our retinæ, trace our pulse, qualitatively and quantitatively examine our excreta, record our temperature, and bring to bear upon our case the last generalization of the latest writer on our peculiar malady? I think that we should; or at all events that we should like to combine, if we could, the guidance from both sources; we should be glad to know all that our younger acquaintance could teach us, but we should also like to fall back upon the knowledge and wisdom of our older friend.

That which has conduced the most powerfully to a disregard of personality and idiosyncrasy in the study of disease, is the prevalent adoption of the statistical or numerical method in the processes of pathological investigation. No one can appreciate more highly than I do the value of that method, but I think we have often missed the point of its teaching, and misapplied the real aids to be derived from it in the treatment of disease. Statistics are eminently useful for the destruction of hasty and erroneous generalizations; by their aid, and often by such aid alone, we can prove that certain currently received dogmata are wrong. But it often happens that "one fact, well observed, is worth (not only) a cart-load of opinions," but is equal to many folios of statistical inferences, calculated to any number of decimal points.

The value of statistics in pathology is in proportion, first, to the approximate identity of the several cases with which the inquirer has to deal; and then, secondly, to the number of the cases exhibiting such nearness of resemblance. When the former element, the resemblance of cases, is disregarded, no matter how wide the area from which the results have been derived, we have learned some curiosities of arithmetic, but nothing of real scientific value in pathology. When the latter element, the extent of the area of observation, is forgotten, we may have acquired some amusing learned lumber; but we obtain little that can be of real service in our attempt to grapple with the multitudinous variations of disease in so complex a being as man.

At the best, our knowledge is but a fraction of the truth we want to know, and statistics do but tell us what that fraction is. But where, as it seems to me, our frequent mistake lies is in the fact that we regard this definite fraction wrongly in giving to it a positive and substantive value, whereas we should look to the other side, the often much larger fraction, that represents the unknown, unexplained, and unreduced facts of medicine, and apply all our energies to their solution. An illustration may make my meaning clearer. In applying the results of statistics to the etiology of a particular case—it matters not of what disease—we say, *e.g.*, that in 25 per cent. there is an hereditary taint, and we fall back upon the idea that the chances are as one to three that the disease was, in this particular instance, inherited, and so we sometimes content ourselves with such assumption, and seek for no other causation. Further, it may be within our personal knowledge that the patient's father suffered from a like affection, and so no other explanation seems necessary, and we do not seek for it. But let me ask whether, if in 75 per cent. of all cases of a particular malady no hereditary taint could be discovered, we are right in putting the chances of heredity at so high a point as one to three in any particular instance? If in 75 per cent. the disease had originated spontaneously, or apart from hereditary taint, it might do so, and probably has done so, in some of those twenty-five in whom hereditary taint has been shown to be possible. On purely arithmetical grounds, we ought to say that in only one-fourth of the twenty-five could there be an antecedent probability of family transmission of the disease. This would reduce the etiologic value of our statistical knowledge of heredity in this disease to less than 6 per cent. Then let me ask whether or no our duty is not to examine more carefully the other cases, those 75, or more properly 94, per cent., in whom we have no reason to believe in this mode of causation? But still further, whether or no we have not sometimes quietly put aside any investigation of such sort, when the bare fact of the existence of a like disease has presented itself in a near relation of the patient, who is confided to our care? The probabilities are as ninety-four to six against an hereditary origin, but we give our patient anything but the "benefit of the doubt," and frame our etiology, diagnosis, prognosis, and treatment upon an hypothesis which presents ninety-four to six chances against its being correct.

I have selected this example of hereditary taint, and have reduced its value to a minimum, because it rather militates against the view that I wish to enforce of the importance of a knowledge of family history, and still more of individual character; but a similar line of argument might be employed to show the exceeding vagueness of our knowledge, derived from statistics, with regard to other etiological conditions of a very large number of diseases, and the urgent necessity that exists for careful examination of each individual case, as to the origin of the malady which may bring it before our notice, and of the extreme danger which attends the propensity to fall back upon numerical statements.

Our daily and hourly work is with individuals, and I cannot but think that, so far as regards the comprehension of their diseases and their needs, statistical pathology has afforded us no other aid than the elimination of much currently received opinion. This has a real and obvious value; and it is in this destruction of error, and not in the construction of the science of medicine, that the numerical method finds its *rôle.*

Again, it is curious and interesting to know—as we do pretty accurately—how many people in 1875 will be killed by railway accidents; how many will break their legs in Hansom cabs; how many will drink sulphuric acid; how many will be burned to death; how many will die of phthisis and carcinoma; and how many octogenarians will marry young girls under twenty years of age. But when we have obtained this knowledge, so curious, and yet so precise, let me ask, of what value is this to you or me, or any of our patients, who may be starting on a railway journey, "hailing a Hansom," using sulphuric acid, shutting off our gas at night, exposing ourselves to cold or worry, or advancing in years to the fourscore, which, on high authority, is said to be but "labour and sorrow?" So far as I can see, the value is inappreciable, for life is too complex in each individual for the application of many general laws; and, least of all, for the deductive use of those which are derived from a mere regard to numbers.

By statistical formulæ we may "insure" lives, so as to benefit the survivors, and protect shareholders; but we can use them only in their application to the many; they are of no pathological significance to the individual. That one man is accepted at ordinary rates, and that another has to pay an addition of 20 per cent. to his premium, may be a useful arrangement for the office, which deals with masses; but it affords no guarantee that the former may not die of fever within a month, or that the latter may not outlive all those who had no drawbacks to their claims. And here, let me say, that a practice somewhat common in insurance offices may, I think, lead to some serious discomfiture hereafter: I mean one which seems very natural, viz., that of making an addition to the premium for insurance of a faulty life, to be removed, if, after five, seven, or ten years, on re-examination, the proponent is in good health. This is done with a kindly feeling of regard to the individual, but not on an established basis of statistical knowledge; and the two elements, of judgment of the probable future of the individual on the one hand, and the requirements of the office on the other, are somewhat jumbled together; and so we, as physicians and advisers, are stepping out of the known lines of average probability for the many into the vague territory of knowledge of the individual with regard to whose personal and peculiar chances of viability we know little, or next to nothing.

Perhaps there is nothing which marks more distinctly the individual peculiarities of people than the relations which they bear to external agencies—material and immaterial; such as light, heat, electricity, food, and drugs. We call these peculiarities, idiosyncrasies; we meet with some of them two or three or more times in twenty years, but others are so rare that a long life of varied and wide experience may have witnessed but one example. Some people are most delicate electrometers and magnetometers; and I know one such who became blind in a thunderstorm eight years ago, and whose physical frame before and since that time is always contorted by electrical and magnetic disturbances long before the former are recognized by ordinary people, and when the latter have only been displayed by perturbations of the machinery for electric telegraphy. We may all possess properties which are influenced by such conditions; but they are affected to only such a slight degree that the existence of such sensitiveness as that which I have mentioned must be regarded as individual. Again, peculiarities with regard to food furnish another example of the same distinction. One person cannot take egg, in any shape or form; to another tea and coffee are poisons; some cannot eat flat-fish; others are put into cutaneous tortures by strawberries. And so with drugs; ipecacuanha will make some sneeze, a grain of iodide of potassium will iodize one person, a grain of grey powder will salivate another, opium will produce colic in a third, and so on. In the face of facts such as these, it behoves us to regard each individual member of the human family as at present, and at all events for pathological and therapeutical purposes, unexplained and often untouched by those general statements, or so-called statistical laws, which we have been able to frame with regard to the behaviour of the race.

We speak of dentition troubles, of all the morbid tendencies which accompany the several epochs of life, of the surgical operations that may be undergone, of the diseases that are prevalent at this age and at that; and, indeed, sometimes of the end of it all in death, in such way that one is reminded of the comfort taken to him or herself by that very clever person who moralized upon the post-mortem, or perhaps not always post-mortem, treatment of the eel! "Custom hath made it in him a property of easiness" may sometimes be said of the physician or the surgeon, as well as of the grave-digger who sang over his ghastly toil, and also of the astute fish-fag, who failed to recognize the individuality of the eel, upon whom was being performed the last tender office of removing its cutaneous envelope.

Daily experience teaches us that each case, or rather that each man and woman, must be examined for himself and herself; and that nothing short of a knowledge of the individual will be of real service to us if we would understand and treat disease. We are all of us alike, yet we are all dissimilar. Each of us has for himself to go through but once the stages of development that are common to us all. Each individual life is continuous, and passes onwards, and alone, through growth to maturity and decay. No one can keep with us; no one can enter into all the mysterious windings of our intellectual and moral being; no one can do more than share our troubles and our joys; no one can take them from us; the sympathy and the love that help us to bear them, and which we so fondly cherish, do not render us less alone; and as we reach this epoch or that period of our existence, and find ourselves floating, drifting, or manfully pushing onwards upon the rivers and over the depths and shoals of time, and which we know that our fathers have passed through before, we cannot help, each in our individual consciousness—in spite of statistical law, of bold generalization, and *reductio ad absurdum* of all preconceived opinion,—we cannot, any one of us, help feeling, as we come to one or many of them, as if

> "We were the first that ever burst
> Into that silent sea."

4. And now I come to the last point that I wish to bring before you, viz., the Individuality or Speciality of Disease. These words do not fully convey my meaning, and yet I know not any others which would serve my purpose better. By illustration, however, I trust that what I mean may be made apparent. The chronic wasting diseases with which we are all painfully familiar—such as tubercle, cancer, rickets, Bright's disease, Addison's disease, gout, and the like—present many points of resemblance *inter se.* They have symptoms in common; many of their accompaniments or intercurrent phenomena are identical; there is much that is common to their modes of termination, and much that is alike in their anatomical appearances. We know, with some approximation to precision, the commoner sequence of events in each of them; can sometimes explain something of their causation; and can

predict, in general terms, their future. An enlarged view of the living bodily functions, and a more careful and extended examination of the organs and tissues after death, have shown a far wider range of physical alteration than that which was believed to exist in many of the diseases to which definite names were given in days gone by. Microscopic analysis, becoming finer and more exact, has revealed such a notable resemblance or identity in the ultimate facts of structure-change in many diseases, that the accomplished pathologist may fail to describe or even see their difference, while their rougher features have enabled even the tyro to put them at once into this category or into that.

And so there has grown up a tendency to sweep away distinctions and names which were the delight of our forefathers; to disbelieve in the existence of so-called "constitutional" disease; and to refer all the changes of tissue to the accidental operation of local interferences with nutrition. There is much to be said in favour of a reconsideration of all old distinctions, and of the names by which they may have become familiar. It is by no means necessary, for example, that the kidney should be always involved in those degenerative processes that may fairly be called "Bright's disease." It is not essential that the supra-renal capsule should be affected in a cachexia that well deserves the name of "morbus Addisonii." It is not constantly found that the ligamentous and cartilaginous tissues of a joint are affected by a special inflammation in one whose antecedents and symptoms warrant the application of the term "gout" to the malady from which he suffers. But I think we should be going far wrong, if, in regarding either the variety, the resemblance, or the wide extent of symptoms, we lost sight of the individuality of that which underlies those symptoms, *i.e.*, of some central fact, property, force, element, or tendency, which finds expression in the special grouping of phenomena or symptoms. There is something that is wrong in the organism of A., and which is radically and essentially different from another "something" that is wrong in the organism of B., when the one presents tubercular disease and the other cancer. We do not know what that something is, nor does it seem to me that we do more than approximate a knowledge of the direction in which we should look and work in order to find it out.

We know very much of the general order of events, of the relative frequency with which this organ and that is found involved in tubercular, cancerous, or other cachexiæ; but as to the determining causes of such differences of proclivity in the affection of particular organs, we know next to nothing. They are at present ultimate facts of science; and they are like to those which pertain with regard to the "acute specific diseases." With respect to them, we know that scarlet fever affects the throat, the skin, and the kidneys in a particular manner; that the poison of measles, of typhoid, and of other exanthemata exhibits another form and order of infection; but as to the reason for these facts in their history we know nothing. We fall back in regarding the latter—the acute specific diseases—upon the individuality of the poison that is brought into the body from outside; with regard to the former—the chronic and constitutional maladies—we must, I think, adopt a similar process of thought, and recognize a speciality or individuality in that which determines the starting-point and subsequent career of their morbid changes. It seems to me that the further we carry our knowledge of the intimate detail of structural alteration, the further do we carry ourselves away from the discovery of the "missing link." Diagnosis may often be as easy as it is possible to conceive up to the point of recognizing some diseases, to which we may give a name that is useful for the purposes of recognition; but we are only on the threshold of inquiry as to the whole pathology and etiology of those affections, or, in other words, their complete diagnosis.

With regard to many diseases, we are in a position that might be described as somewhat like that of the physiologist and the schoolboy in combination, when they have found two birds'-nests. The one—the histologist—shall examine the contents of one of the eggs of each nest, and apply all his microscopical powers on the cells that he shall find ; he may call the chemist to his aid, and yet fail to give, after the most searching gaze and chemical analysis, even a guess as to the nature of the bird that would be developed by the simple application of warmth to another egg which he has not broken. The other—the schoolboy—looks at the shell, and decides in a moment that this will become a blackbird, and that the other will produce a lark. What the relation may be between the colour and the marking of the shells and the wonderful constitution of their contents that shall determine the development of this bird or of that we do not know. What is the difference between their contents we do not know, but let us remember that a quite specific and wide difference does exist between them, although it is far too fine for any of our processes of investigation to demonstrate its nature ; and yet that a correct distinction may be made by observation of the character of certain superficial phenomena which we can in no way connect with the essence of the difference. If we apply this illustration to the diagnosis of disease, we see that the pathologist sometimes ignores the existence of difference which he cannot apprehend ; misses his true line of work, which lies often in another and as yet unconsidered direction ; while the practical man solves the question at a glance. The difference really exists, but it is by its outcome, in the modification of life-functions, that we really make our diagnosis of disease ; and by regard to these, I think we are driven to a belief in the individuality of special ailments.

While we are perhaps losing way rather than making advance in our knowledge of some classes of disease, by the endeavour to get rid of their individuality, there is, at the same time, a tendency to over-refinement of specialization and nomenclature in regard of other classes. Such terms as "locomotor ataxy," "Cruveilhier's atrophy," and the like, may be very useful if they but direct attention to the lines along which degenerative changes in the nervous centres are apt to run; but if there is attached to them the kind of importance which we sometimes find they have received, we wander, I think, from the true path of scientific investigation, and are led to separate from one another maladies which are much more closely allied in their real nature than the difference of their names would warrant us in supposing. There is an individuality in these, but let it not be over-estimated; there must be something which determines why this tract or that of fibres in the spinal marrow shall be the starting-point of morbid process or decay; but the conditions which lead to these differences have not yet been made out, and there are many so-called causes of disease which are common to them all. What I think, then, that we should do is, bearing in mind the individuality of disease, search into all its phenomena, not rest satisfied with those which seem the most relevant and the most consistent with the present modes of physiological thought, and the ascertained facts of pathological research; but pass beyond them into the outlying regions of vital phenomena, and perhaps discover in them (*i.e.*, in some apparently irrelevant facts) the clue to a solution of their mystery.

In recapitulation, let me remind you—1. That by losing sight of, or underrating the primary fact of life, we deprive ourselves (*a*) of the information to be gained from a study of subjective symptoms; (*b*) we often misdirect our therapeutic efforts, by eliciting vital action, rather than by conserving vital force; and (*c*) lose sight of many of the most important causes of disease. 2. That by failing to see the speciality of the nature of man, we underrate or ignore (*a*) much of the etiology of human suffering; (*b*) are often misled by the results of observations upon animals; and (*c*) are in danger of misinterpreting the facts of the most serious maladies that may afflict our fellow-creatures. 3. That by disregarding the individuality of man, we are in danger (*a*) of again and in another way losing a due appreciation of the causation of disease; and (*b*) of overrating the value of statistics, and of being led astray by their apparent precision, which exists only with regard to masses; and 4. That by an unsound application of the idea of the specificity of disease, we may, on the one hand, (*a*) sweep away distinctions which are facts of pathology, and, on the other, (*b*) raise up or lay down lines of demarcation which are unreal.

From what I have said it is, I think, obvious that the science of medicine is in a state of "change" as well as of "progress." It has not yet arrived at the degree of exactness which may be found in the simpler sciences; but those who are devoting themselves to its pursuit are pressing towards that end; and each is endeavouring so to throw his mite into the treasury of knowledge, that a scientific ordination of the facts of pathology may hereafter be a possibility. But the facts are so diverse in kind, so varied in appearance, and so bewildering in their complexity of form, that we must wait, and perhaps wait long, for their due arrangement. Thousands of observed facts lie as yet hidden in the valuable but unrecorded experience of those who are daily adding to the unwritten lore of medicine. We gather scraps of them in conversation and in consultation; we may often see something of their influence upon the habit of thought and of practice of those whose large stores of information have not as yet been exposed to view, and which have not as yet been sorted for personal use. But a true science of pathology cannot be, until the knowledge of all individual workers is the common property of all. In the meantime we must " learn to labour and to wait;" and we must least of all commit ourselves to any particular school or line of thought, but rather cultivate that habit of mind which has " a look southwards, and is open to the whole noon of nature."

Those who are the workers in this wide field are not all in one " stage," as it has been termed, of scientific inquiry. We are not all of us in either the " theological," " metaphysical," or " positive " stage of thinking with regard to our relationship to the facts and forces around us. Very few individuals who have seen much, thought much, and felt much are so limited with regard to the sum total of their experiences as to assert even for themselves a position—an exactly limited position—on either one of these three platforms. But each one has his bias or tendency of thought; and the work that each does, and the results to which such work tends are greatly influenced by such underlying and directing force. I have endeavoured to show the effect which, as it seems to me, may be produced by an over-attachment to one line of investigation, and by a neglect of another, the results of the pursuit of which the student of man can ill afford to lose.

In our recognition of the *Speciality of Disease*, we have carefully to examine the nature, and the sources, whence they come, of all the contaminations by which the stream of life may be damaged or defiled. They may be puzzling, hard to separate, and still harder to trace to their source. They may be complicated in their effects, and so mixed together, that again and again we may be baffled in our attempts at their analysis. But what we want is work, not on any preconceived theory, but work that shall faithfully follow onwards and trace backwards the line of sequence of events, and eventually yield, as it has done before, a real knowledge of the facts we wish to know.

Again, with regard to the *Individuality of Man*, we must strive to show whence each life has come; the nature of its source; the conditions of its youth; the struggles of its onward progress; the valleys through which it has passed, and the rocks it has had "to overleap or rend." We may often be perplexed in our attempt to solve the problem it presents, but we must accept the facts of their existence, and of their variety. We see a quiet onward flow in the course of one, and a stormy, labouring, toilsome course in another. One seems like a river wandering through valleys in which children play, and upon whose banks age reposes; untroubled by the oar, unhindered by the wheel; and sometimes in deep places, seeming to be at rest, but still passing, although gently, onwards, without sound or ripple, to the far-off sea. Another life-stream comes from its rocky home, dashes hither and thither, in what seems its wayward youth; but gathers strength as it flows on, and does mighty work, setting in motion a thousand busy looms; bearing on its broad breast the light craft of idlers, and also the dark, heavy burthen of outlying toil; working and carrying still onwards the labours of a thousand lives, through quiet valley or through noisy town, until it, too, finds its home. We must know all that makes up individual life, if we would understand its ills. We must go back to its source, and look around at all through which it has had but to pass, or to work its way, if we would know how to understand or avert the troubles it may meet.

And again, with regard to *Man*, it is not until we recognize in him his true relation to the world that lies around him—which in many of its forms of life comes so near, but which is yet so far removed from him in his higher phases—that we shall duly understand his sorrows or whence they come, in such way as to prevent them or relieve them when they are thickly hedging him about.

And, lastly, we must duly appreciate the great fact of *Life*—the mystery of mysteries—that underlies all our knowing, and overarches us, with sometimes an abyss of light, sometimes with impenetrable gloom. When we try to realize it, we seem to be—for we ourselves are a part thereof—on the surface of a boundless ocean; above us the sky, now dark with cloud or rent by storm; now lit with sunbeams, or trembling with the pale light of stars; beneath us a mighty deep, with its unknown treasures, mysterious currents, and "sense of unfathomable danger." Sometimes we "see the light and whence it flows," "we see it in our joy." Sometimes we see the land, and press towards it; but, again, the night comes down, the horizon line is lost, we are poised between two worlds, and, although we may strain our eyes to see, and our ears to hear, we may find no token to tell us of the points in which they meet, no glimmer of the unseen things that sever them.

But let us thank God that we are not left alone, and that in such darkness there often arises light; for, often when most sorely troubled with the surrounding mystery—the abiding mystery—that shrouds the details of our knowledge of both man and life, we find in our own consciousness, our thoughts, and feelings, that which may enable us to help our fellow in his sorrows, relieve him in his sufferings and fears, and banish from his mind and heart the clouds that may sometimes have gathered, so darkly, around our own. And, having this sympathy, and holding in our recollection and present thought those phases of our own and of other lives—which we know full well, but which we cannot reduce to words—we shall be the better fitted to explore and unravel the whole series of phenomena which present themselves in the lower ranges of pathological investigation. The method of such physical research, as well as its results, will check us when we may be disposed to drift away into the mist or to soar into the clouds, will help us to cultivate exactness in all directions of inquiry, and so contribute to the science and art of medicine, which, in spite of all its failures, misdirections, and missing links, is yet one of the greatest boons that man has been the means of conferring upon man, and which, we believe, will in the future far transcend, in its benefits to mankind, all that we have known of its doings in the past.

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